

PhD Candidate Profile

Name: Ilaria Berruti

Research Group (if relevant):

Solar treatment of Water Unit- Plataforma Solar de Almeria (PSA)



Research Centre (if relevant):

Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas

Department/School(s) (if relevant):

College:

Supervisor(s):

Dr. M.I. Polo López

Dr. Marcello Manfredi

Funding body:

MSCA-ITN-ETN Aquality (Interdisciplinary cross-sectoral approach to effectively address the removal of contaminants of emerging concern from water) (Ref. 765860)

Area (field) of study:

Environmental applications of Advanced Oxidation Processes (AOPs) for water treatment

Thesis Title:

Assessment of novel Advanced Oxidation Processes for removal of Disinfection By-Products (DBPs) and Contaminants of Emerging Concern (CECs) from drinking water

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Abstract:

The efficiency of different solar based processes (solar light/H₂O₂, solar light/OXONE, heterogeneous photocatalysis, photo-Fenton at neutral pH) for removal of CECs (Contaminants of Emerging Concern: Trimethoprim, Sulfamethoxazole and Diclofenac), for the abatement of DBPs (Disinfection by-Products) and for the inactivation of four families of pathogens (E. Coli, P. Aeruginosa, E. Faecalis and Viruse MS2) will be investigated. These processes will be compared using the UV-C as commercial drinking water technology. The performances of each water treatment will be evaluated at: (I) laboratory and pilot plant scale and (II) in isotonic solution to conduct preliminary kinetic studies and in Well Water (WW) to investigate the effect of water composition on solar processes efficiency. Particular attention will be paid on Natural Organic Matter (NOM) and DBPs formation during the water treatments. The optimization of all variables and a cost/benefit analysis will be done in order to up-scaled the studied processes

Collaborations:

N/A

Publications:

Erik Cerrato, Chiara Gionco, Ilaria Berruti, Fabrizio Sordello, Paola Calza, Maria Cristina Paganini, *"Rare earth ions doped ZnO: Synthesis, characterization and preliminary photoactivity assessment"*, Journal of Solid State Chemistry Volume 264, August 2018, Pages 42-47.

Presentations:

- 10th European meeting on Solar Chemistry and Photocatalysis: Environmental Applications (SPEA10);
- 2nd AQUALity Symposium Meeting, Aalborg 30th-31th August 2018.